

Armed Forces College of Medicine

AFCM



The Short Ascending Tracts

:By
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INTENDED LEARNING OBJECTIVES (ILO)

By the end of this lecture the student will be able to:

1- Define the Short ascending tracts carrying the different sensations.

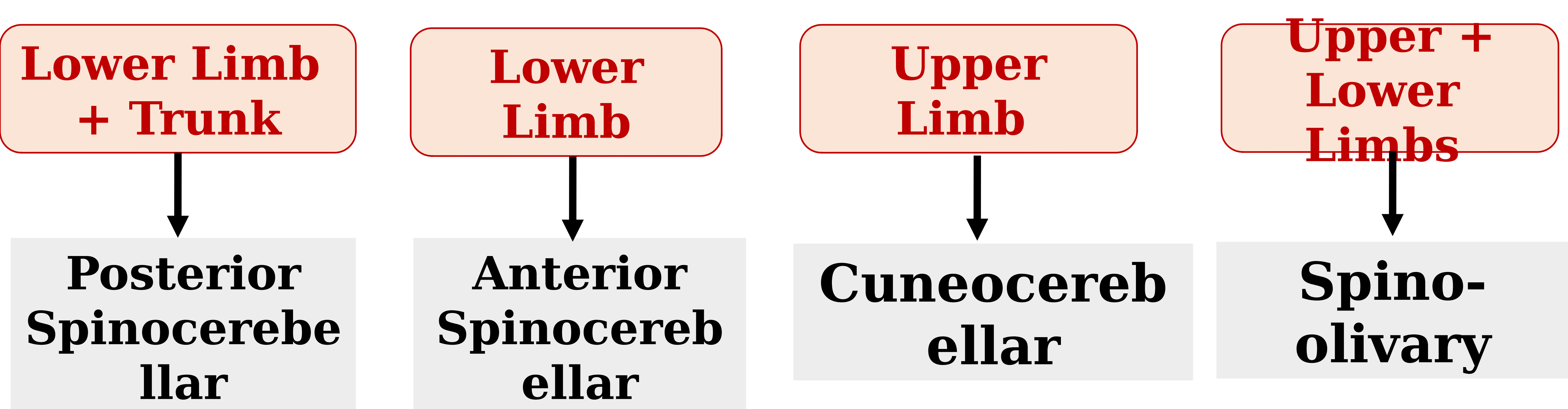
2- Predict the effects of lesion of each tract.

Lecture Plan



1. **Part 1 (10 min): Introduction.**
2. **Part 2 (25 min): Tracts carrying unconscious proprioception to the cerebellum.**
3. **Part 3 (10 min): Other short ascending tracts.**
4. **Part 4 (5 min): Summary.**

Tracts carrying Unconscious Proprioception to the Cerebellum (For coordination of movement)



Posterior view of the Brainstem
with part of the Cerebellum removed

Superior Cerebellar Peduncle

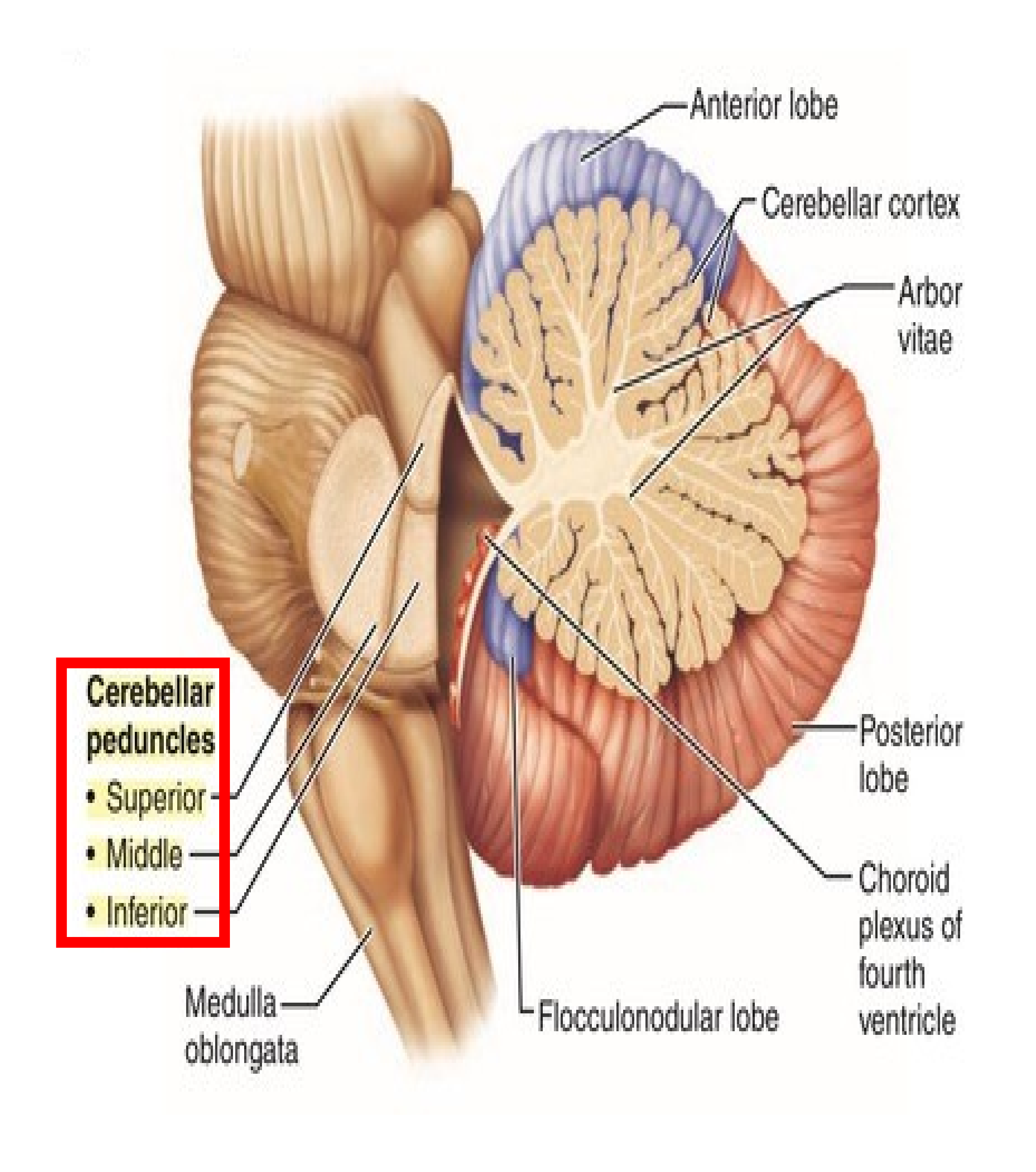
Middle Cerebellar Peduncle

Inferior Cerebellar Peduncle

Anterior Lobe

Dentate Nucleus

Posterior Lobe

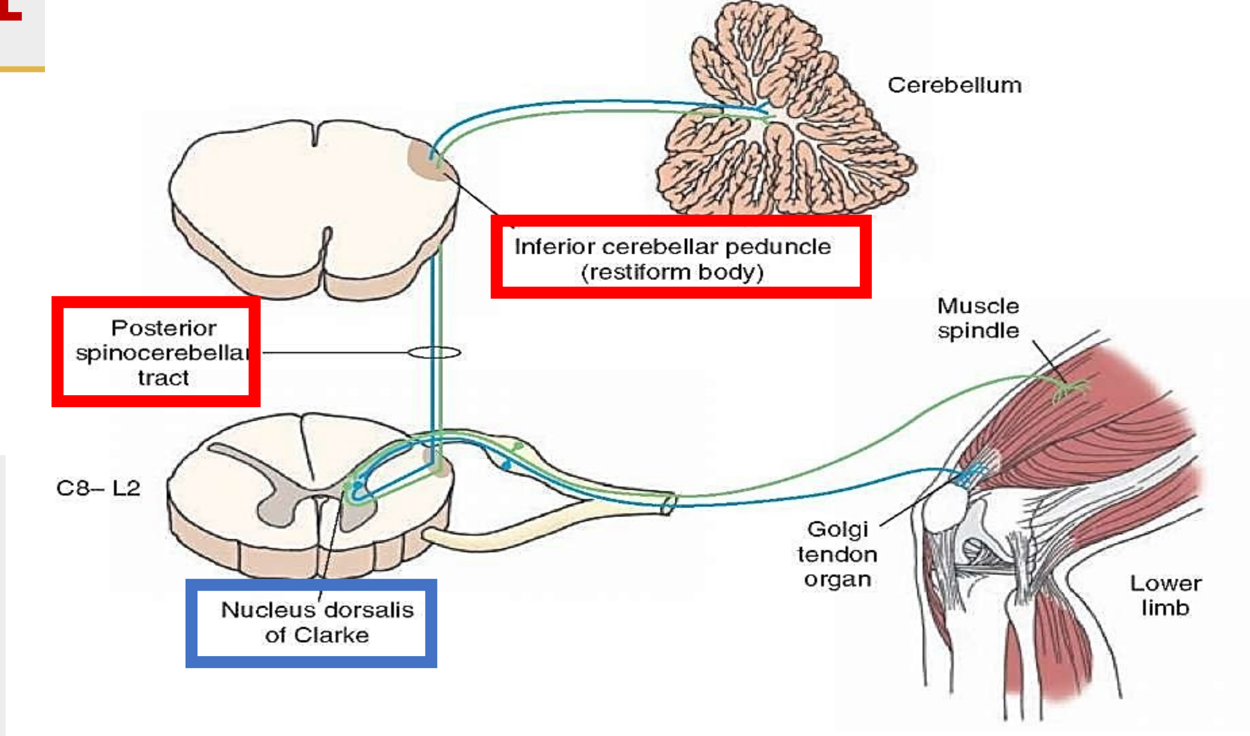


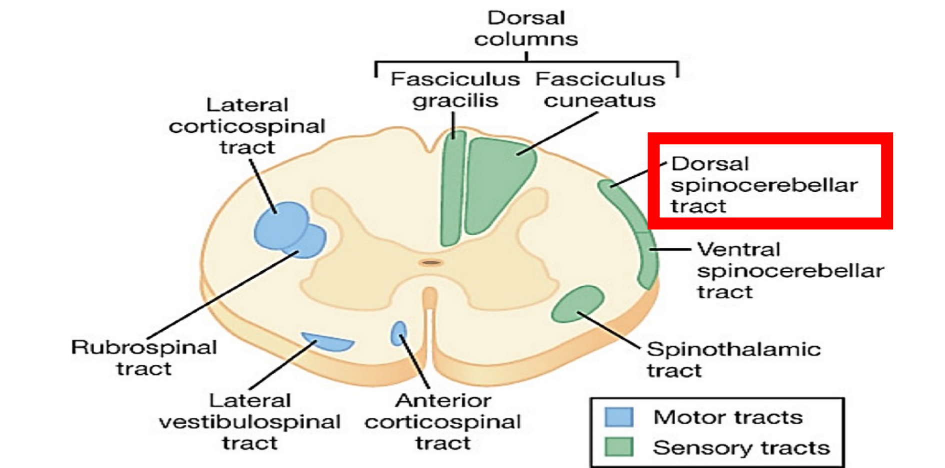
Posterior Spinocerebellar Tract

Carries **Proprioception** from **the Lower Limb & Trunk.**

- The central processes of DRG cells enter the spinal cord via the dorsal root to end on **Ipsilateral Clarke's nucleus.**

- The tract ascends **ipsilaterally** in the **lateral white column,** posterior to the anterior spinocerebellar tract & enters the **ipsilateral cerebellum** via the



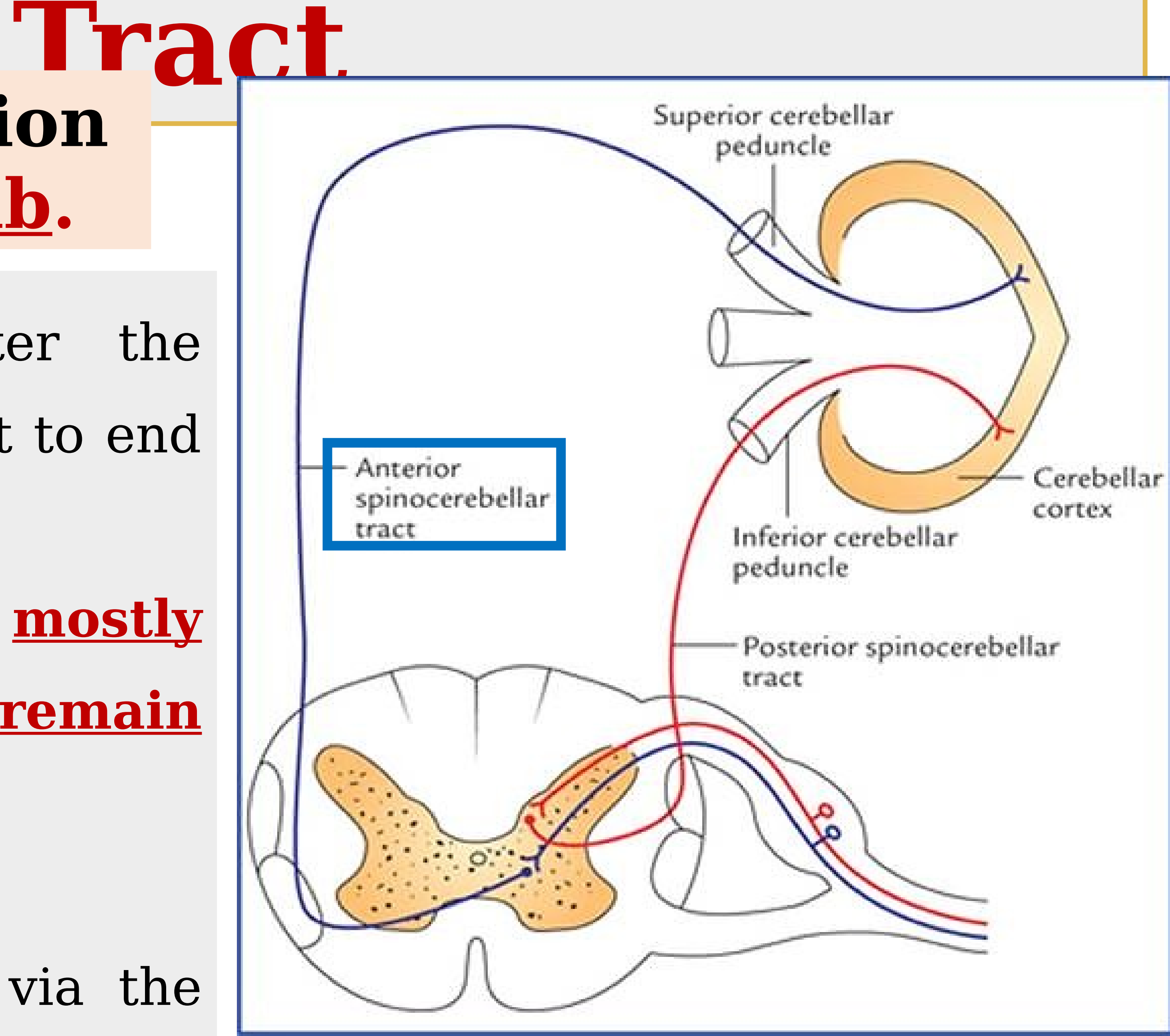


Anterior Spinocerebellar Tract

Carries proprioception from the Lower Limb.

- The central processes enter the spinal cord via the dorsal root to end on **Clarke's nucleus.**
- Axons forming the tract **mostly decussate** but **few remain ipsilateral.**

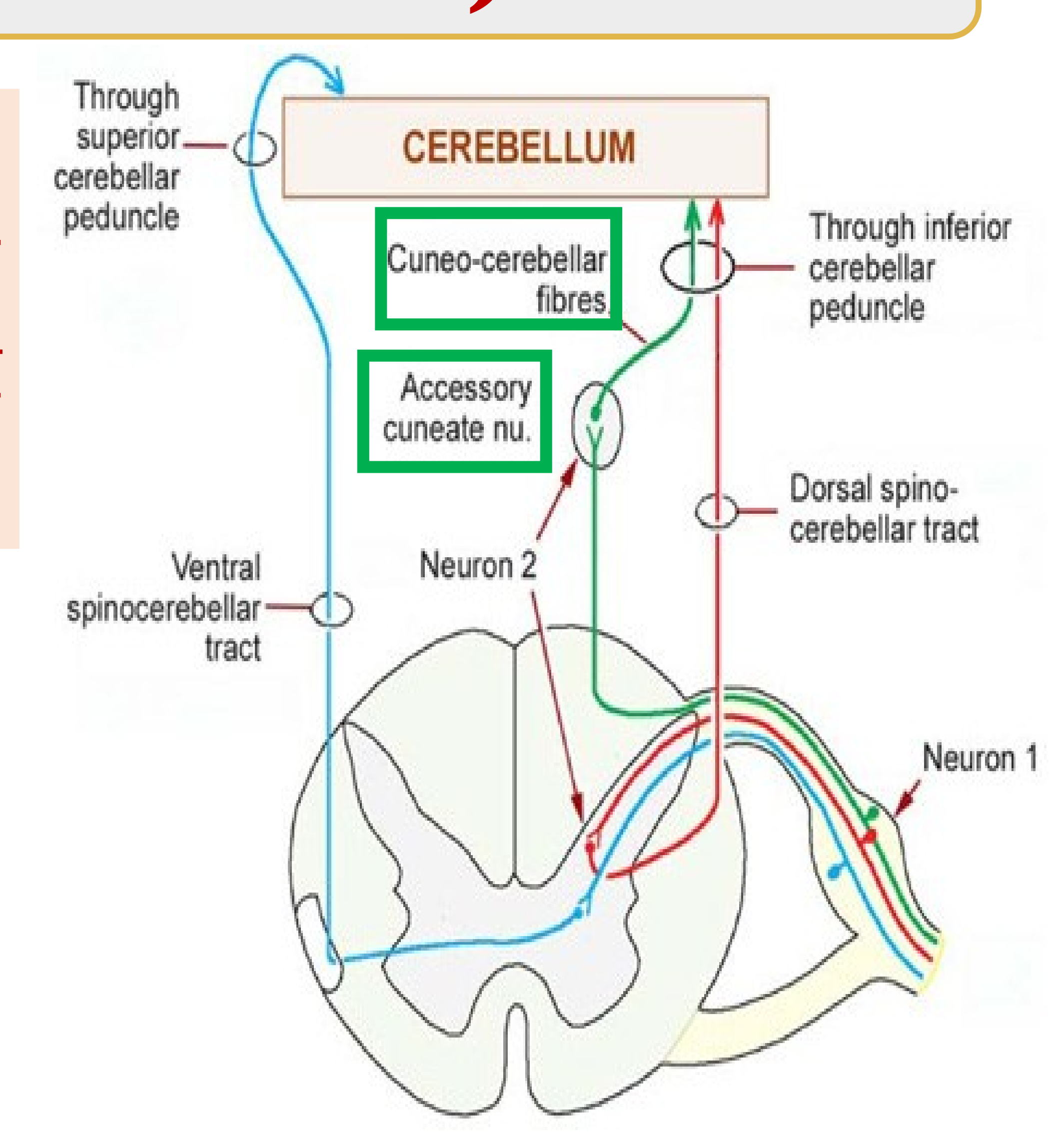
- They enter the **cerebellum** via the

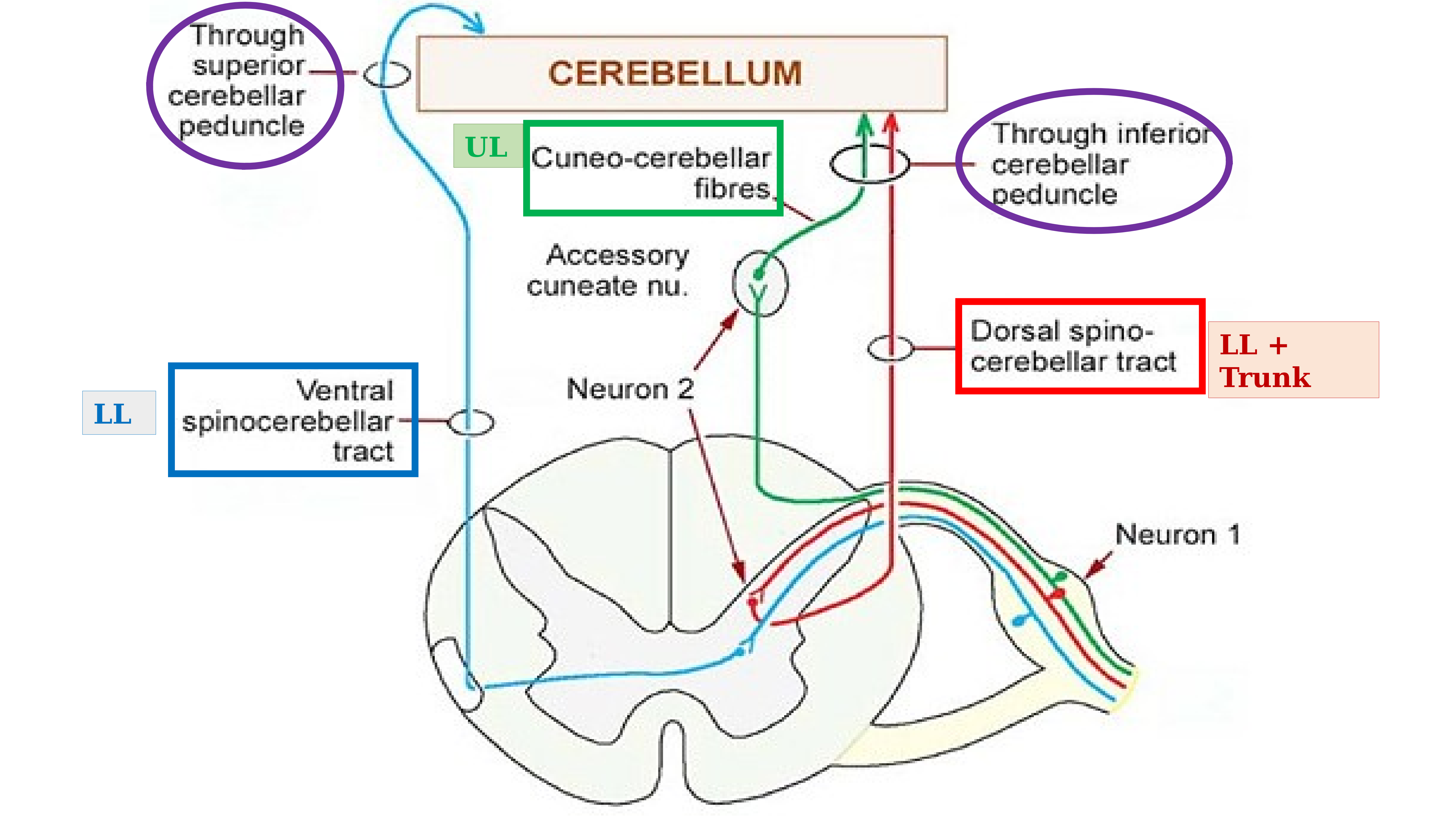


Collaterals from the Cuneate Tract (Cuneo-cerebellar Tract)

Carry **proprioception** from **the Upper Limb** to the **accessory cuneate nucleus** of **the medulla.**

Axons of the **accessory cuneate nucleus** form the **external arcuate fibers (Cuneocerebellar tract)** which



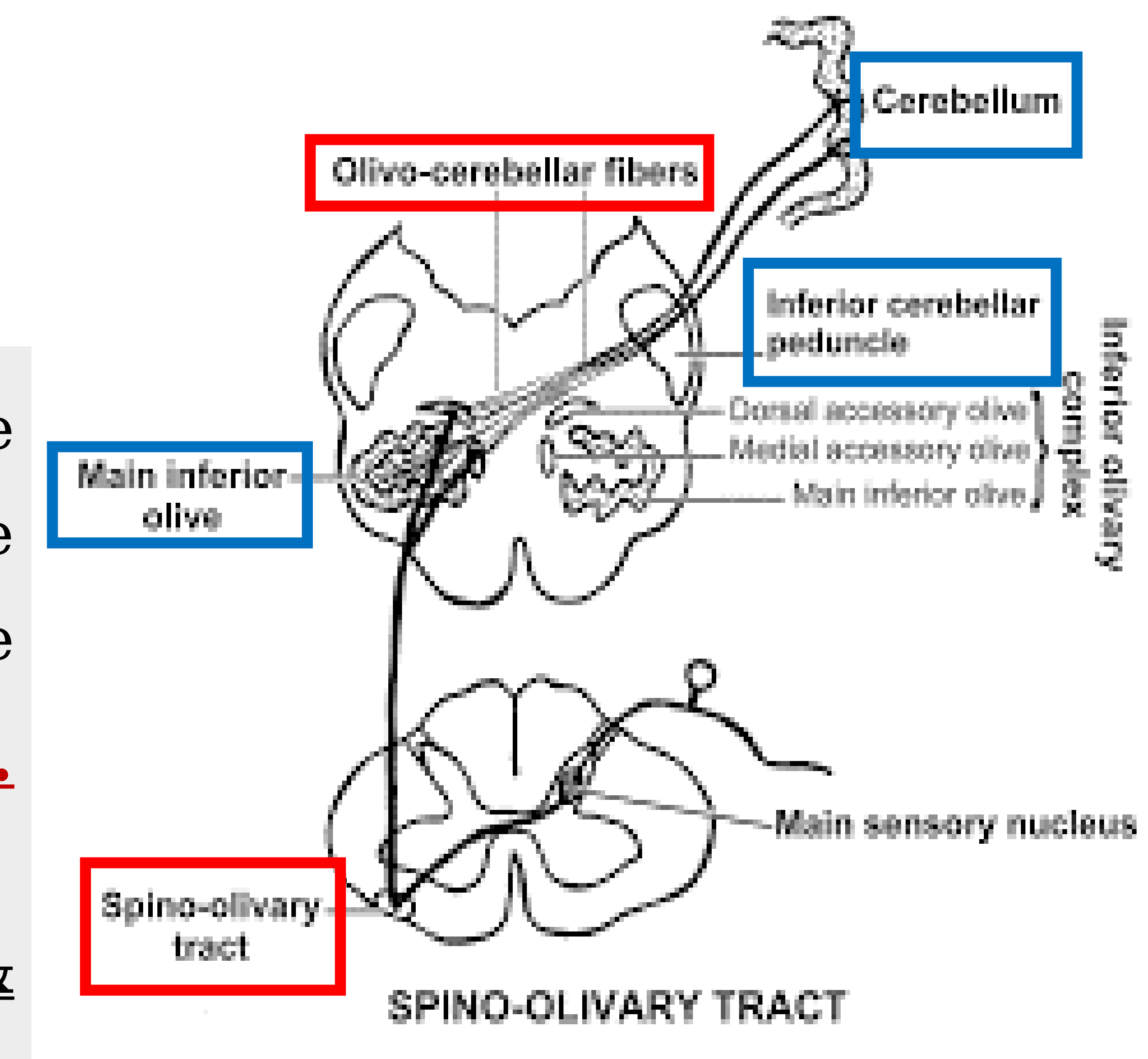

Through superior cerebellar peduncle
CEREBELLUM
UL
Cuneo-cerebellar fibres
Through inferior cerebellar peduncle
Accessory cuneate nu.
Dorsal spino-cerebellar tract
LL + Trunk
LL
Ventral spinocerebellar tract
Neuron 2
Neuron 1

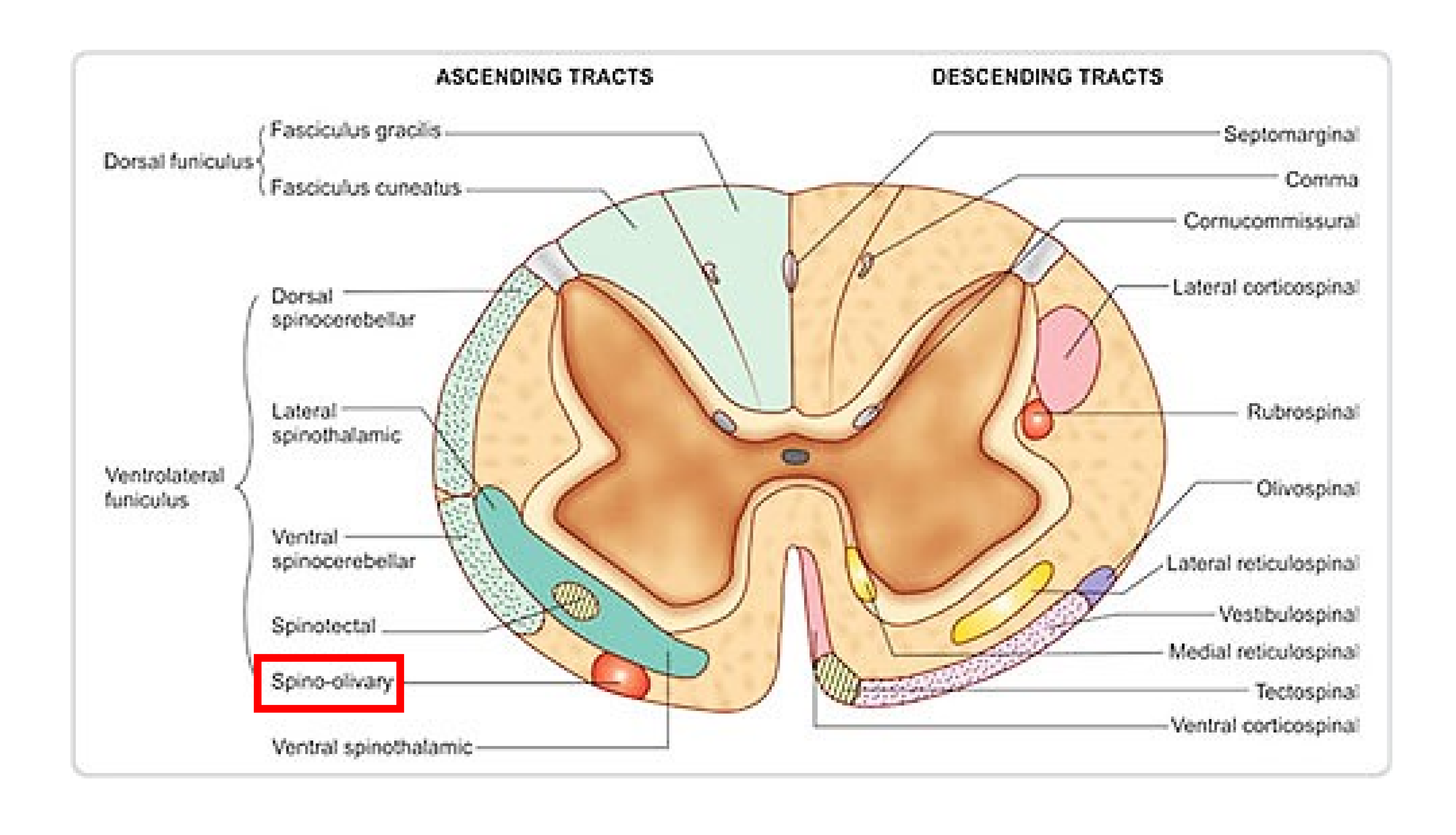
Spino-Olivary Tract

It carries proprioception from **both Upper & Lower Limbs.**

- Its fibers **cross & ascend** at the junction of lateral & ventral white columns to end on the **contralateral olivary nuclei.**

- **Olivocerebellar fibers cross &** pass via the **ICP** to reach the





ASCENDING TRACTS
DESCENDING TRACTS
Dorsal funiculus
Fasciculus gracilis
Fasciculus cuneatus
Ventrolateral funiculus
Dorsal spinocerebellar
Lateral spinothalamic
Ventral spinocerebellar
Spinotectal
Spino-olivary
Ventral spinothalamic
Septomarginal
Comma
Cornucommissural
Lateral corticospinal
Rubrospinal
Olivospinal
Lateral reticulospinal
Vestibulospinal
Medial reticulospinal
Tectospinal
Ventral corticospinal

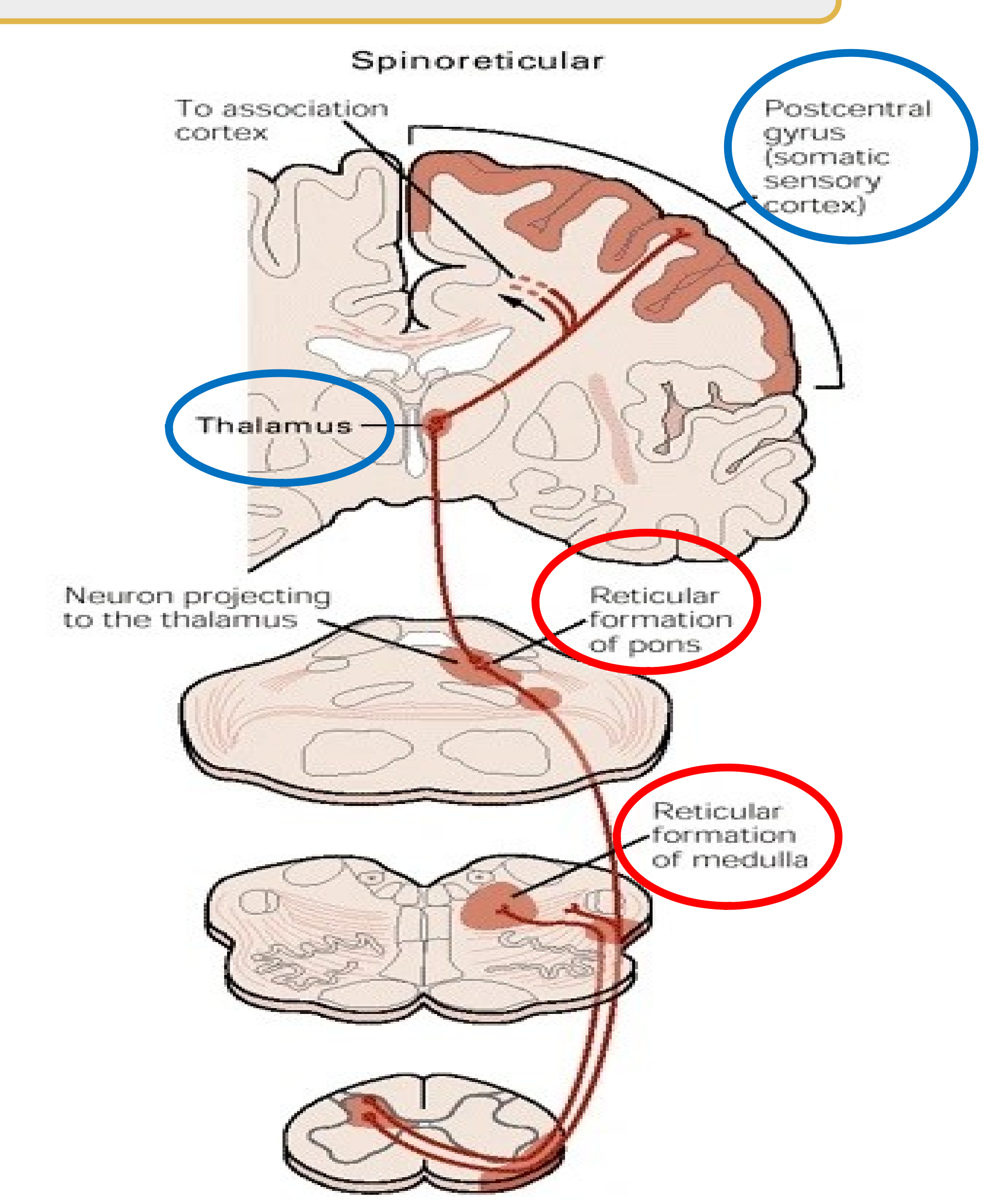
Other Short Ascending Tracts

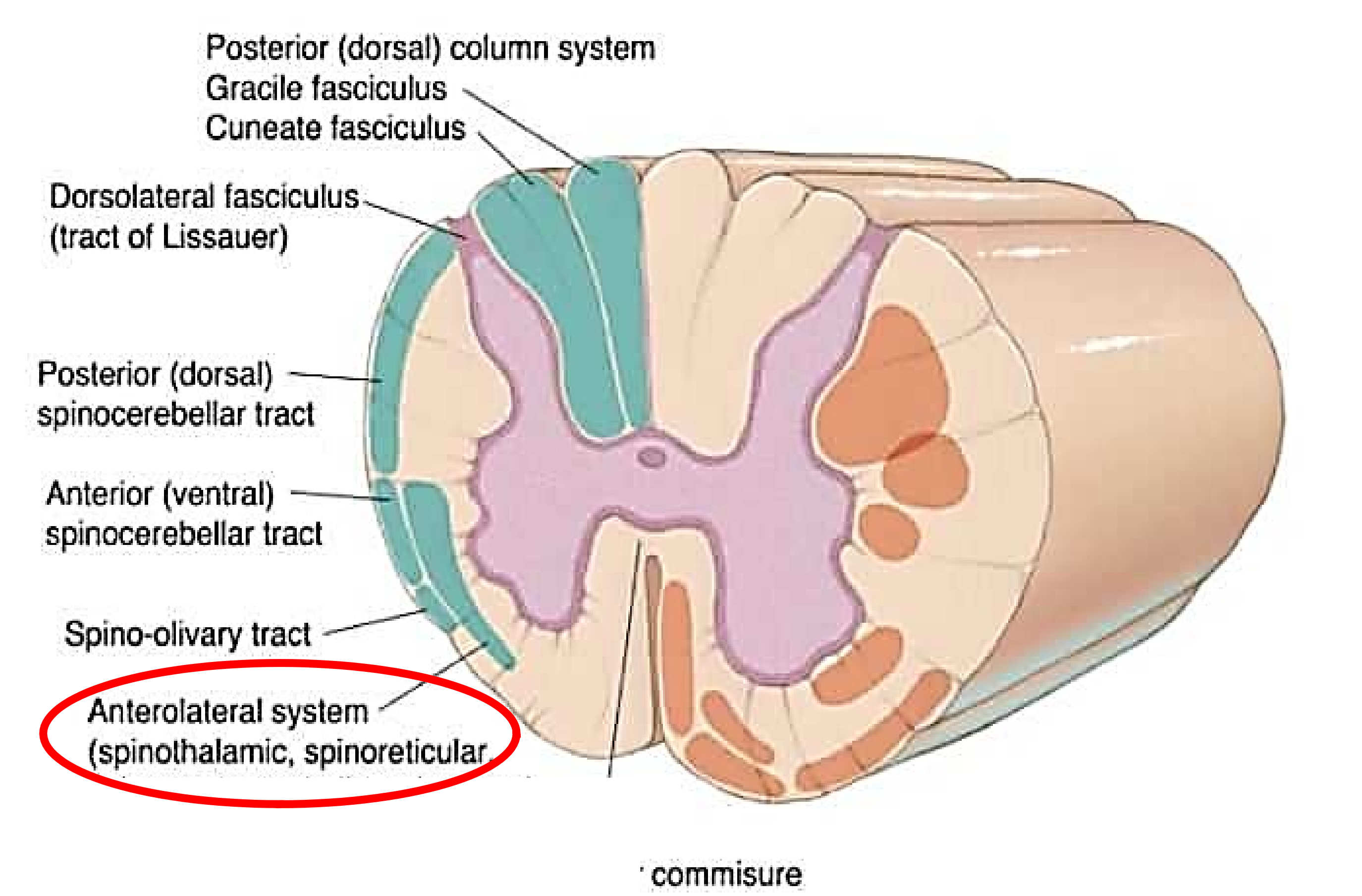
Spino-reticular

Spino-tectal

Spinoreticular Tract

- Its fibers ascend in the **lateral & ventral white columns** where it is intermingled with the spino-thalamic tracts.
- Most fibers **cross to the opposite side** & ascend to end on neurons of **the ponto-medullary reticular**
- A **spino-reticulo-thalamo-cortical pathway** was suggested as a route for **slow dull-aching pain sensation.**





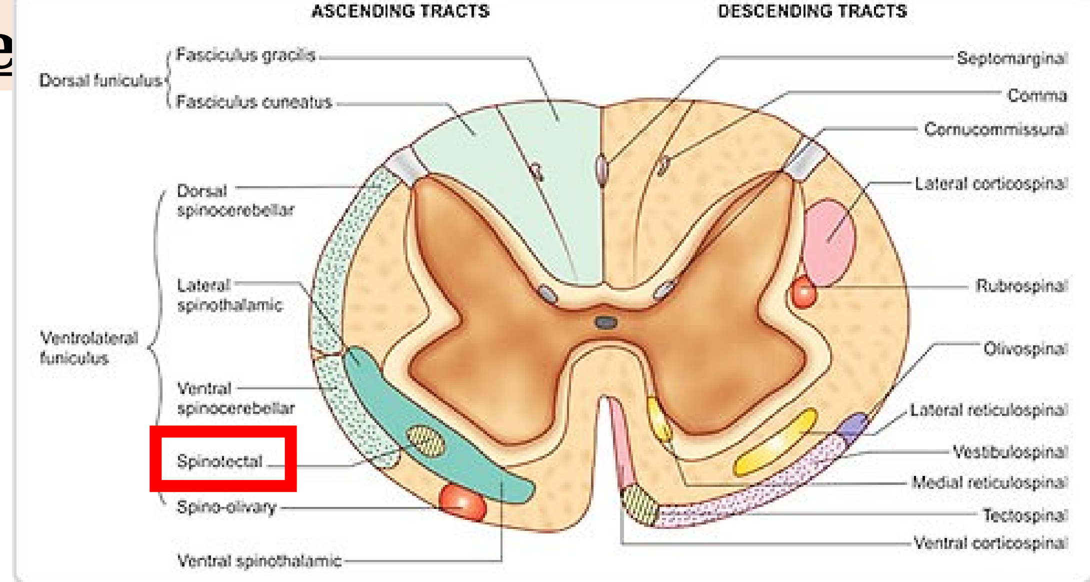
WHAT IS RETICULAR FORMATION?

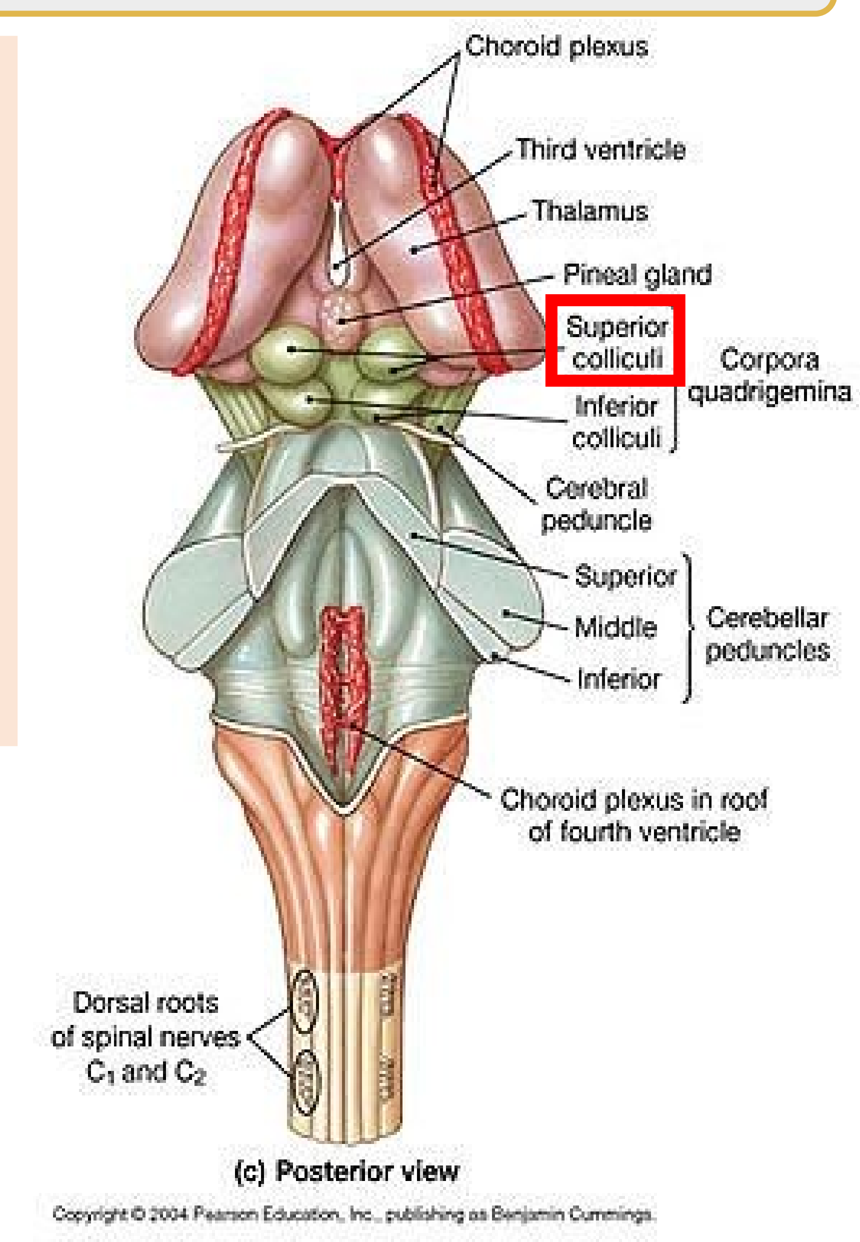
thalamus

reticular formation

Spinotectal Tract

- Most fibers **cross to the opposite side & ascend** in the **lateral white column** to end in the **superior colliculi of the midbrain.**
- The **spino-tectal tract** is concerned with **spino-visual reflexes** (**head turning towards source**





SUGGESTED TEXTBOOKS



Clinical Anatomy for Medical Students .Richard S. Snell

Gray’s anatomy for students .


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THANK YOU